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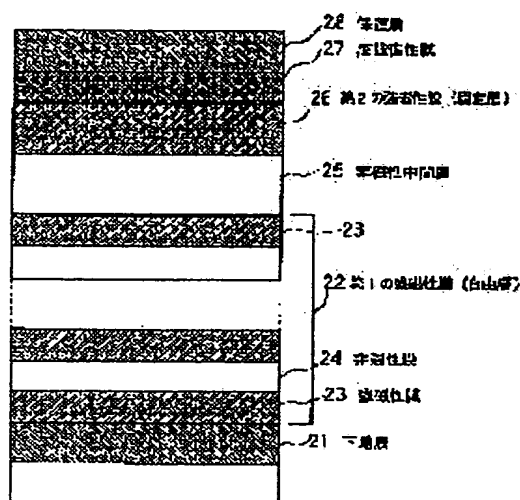
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## (54) MAGNETO-RESISTANCE EFFECT ELEMENT

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain a large resistance changing rate, a superior sensitivity and a large output by providing a first ferromagnetic film having a laminating structure of a ferromagnetic film and a nonmagnetic film and making the magnetization direction of the ferromagnetic film to be arranged in a antiferromagnetic aligning manner by mutal action.

**SOLUTION:** A ferromagnetic film 23 and a nonmagnetic film 24 are alternatively laminated. For example, if they are laminated in four layers, the top surface is the film 24 and the film 23 is laminated at the joint surface with a nonmagnetic intermediate layer 25 in order to produce a nonmagnetic/ ferromagnetic boundary surface. Since the magnetization directions of the ferromagnetic films are reversed for every layer, the electrons having either spin directions are not able to pass the films, which are magnetized in the reversed directions of the spin, scattered and thus, the resistance becomes larger. In order words, electrons are scattered at the boundary surfaces of a first ferromagnetic film 22 and a second ferromagnetic film 26. In addition, a scattering occurs in the film 22 and the two operations are superimposed and a larger resistance variation is generated.



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